# FM Astronomy Club

November 2011

www.FMAstronomy.com



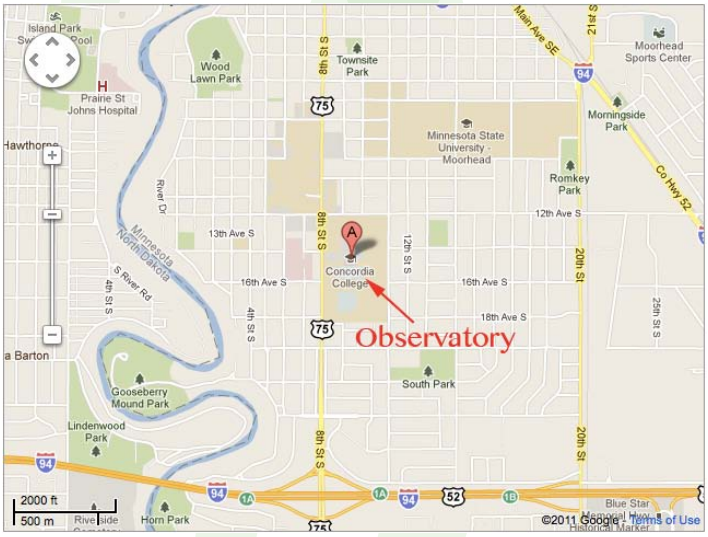
## November Meeting

Tuesday, November 8
7:30 PM - 9:30 PM
(Setup Time: 7:00 PM)

Concordia College Observatory

Bring your telescopes for a short observing night. We will provide telescopes to help with a class of Concordia college students.

We will also make an attempt to see YU55, an asteroid that is passing between the Earth and the Moon on Tuesday evening.

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## Notes for November

This month we are assisting the Concordia College Observatory as they host Dr. Ernest Simmons' students for their class "Life in the Universe". Dr. Simmons would like us to to show examples of celestial objects for this capstone religion and science class.

The class would like to see examples of various objects including planets and Deep Sky Objects (DSO's) Some of the suggested objects to showcase include:

- Moon (waxing gibbous)
- Jupiter
- M11 - Wild Duck Cluster, an open star cluster
- M13 - Hercules Great Globular Cluster
- M15 - a globular cluster
- M27 - Dumbbell Nebula, a planetary nebula
- M31 - Andromeda Galaxy
- M57 - Ring Nebula, a planetary nebula
- Alberio - a double star
- The Double Double - a multiple star cluster in Lyra
- Double Cluster, Perseus - a pair of open star clusters

We will officially start at 7:30, but we can start setup as early as 7:00. We will run until somewhere around 9:00 PM, the observatory officially closes at 10:00 PM.

If poor weather we may move to the Planetarium. Please contact us if the weather is questionable and remember to dress warm.

- Concordia Observatory - (218) 299-3896
- Dave Weinrich
  - weinrich@mnstate.edu (218) 477-2969
- Shawn Johnston
  - shawn.johnston@gmail.com (701) 200-1121

## The Sky This Month
## November 2011

*Reprinted with the permission (and our thanks!) of Dr. Brian Ventrudo, Publisher, One-Minute Astronomer.*

Here are some highlights of what to see in the night sky this month.

Nov. 1-8. The zodiacal light, or "false dawn", persists early this month just before sunrise. This tall, eerie wedge-shaped glow is reflected sunlight off fine dust particles in the plane of the solar system. You need very dark sky to see it.

Nov. 1-15. Mercury is just 2 degrees below Venus low in the southwest sky after sunset. Venus is brighter.

2 Wed. First Quarter Moon (16:38 UT)

6 Sun. Daylight savings time ends for most of North America at 2 a.m. Set your clocks back an hour… and catch up on your sleep.

8 Tues. Asteroid 2005 YU55 passes within 325,000 km of Earth this evening. That's close, closer than the Moon. The 11th-magnitude object passes rapidly through Pegasus at about 7 p.m. Eastern Standard Time. This will be a challenge to see. The only good map I can find to show the exact path of the asteroid is in the November issue of Sky and Telescope, p. 53. But this animation gives you an idea how close this asteroid comes to us…

NOTE: Here is an updated link from Sky and Telescope to help you find Asteroid 2005 YU55

9 Wed. Venus, Mercury, and Antares form a short and nearly straight line in the southwest about 30 minutes after sunset. Venus is the brightest, Antares the faintest. The view is better south of 45 N latitude. See map at http://bit.ly/v8LuRi

10 Thurs. Mars passes within 1.5 degrees of the bright star Regulus in the constellation Leo. Look for the spectacle high in the eastern sky 1-2 hours before sunrise. Mars rises near midnight at mid-month and passes through the Sickle of Leo. The planet brightens from +1 magnitude to +0.7 magnitude by month's end. It's still very small in a telescope, reaching a size of just 6"-7".

10 Thurs. Full Moon (20:16 UT)

14 Mon. Mercury reaches its greatest eastern elongation about 22.7 degrees from the Sun. As noted above, it stays close to Venus in the southwest sky after sunset.

18 Fri. The Leonid meteor shower peaks before dawn. While it's a good shower some years, the Moon washes out fainter meteors this year. Look for the meteors anywhere in the sky. If it's a Leonid, you can trace its path back to a point in the constellation Leo.

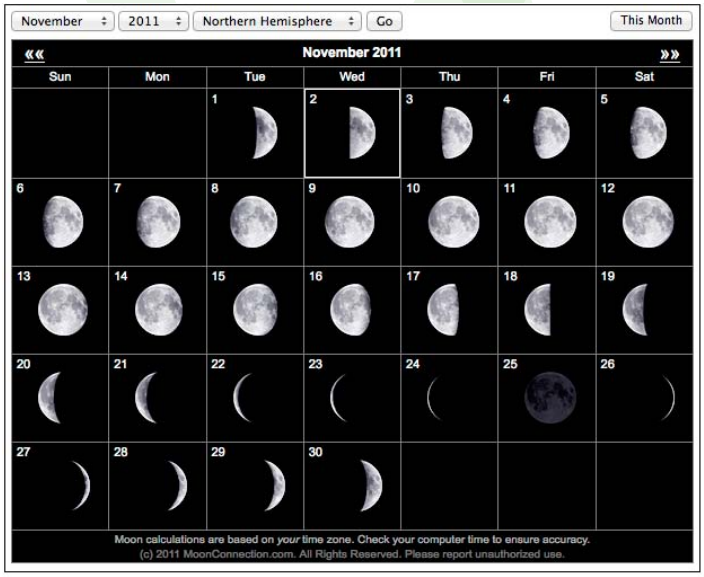
18 Fri. Last Quarter Moon (15:09 UT)

22 Tues. The planet Saturn, bright white star Spica, and a waning crescent Moon line up in the southeastern sky just before sunrise. Saturn rises about 3:30 a.m. by month's end, reaching 25 degrees above the horizon by sunrise. The tilt of the rings is close to 12 degrees, which presents a much more dramatic view in a telescope than in recent years.
See map at http://bit.ly/rArDVY

25 Fri. New Moon (06:10 UT)

Visit **www.oneminuteastronomer.com** for star maps, articles on observing, getting started in astronomy, and more.

## Moon Phases - November 2011
**www.MoonConnection.com**




*Reprinted with the permission of David Rose, developer of MoonConnection.com. Thank you David!*

# NASA in Final Preparations for Nov. 8 Asteroid Flyby

http://www.jpl.nasa.gov/asteroidwatch/newsfeatures.cfm?release=2011-332

NASA scientists will be tracking asteroid 2005 YU55 with antennas of the agency's Deep Space Network at Goldstone, Calif., as the space rock safely flies past Earth slightly closer than the moon's orbit on Nov. 8. Scientists are treating the flyby of the 1,300-foot-wide (400-meter) asteroid as a science target of opportunity - allowing instruments on "spacecraft Earth" to scan it during the close pass.

Tracking of the aircraft carrier-sized asteroid will begin at 9:30 a.m. local time (PDT) on Nov. 4, using the massive 70-meter (230-foot) Deep Space Network antenna, and last for about two hours. The asteroid will continue to be tracked by Goldstone for at least four hours each day from Nov. 6 through Nov. 10. Radar observations from the Arecibo Planetary Radar Facility in Puerto Rico will begin on Nov. 8, the same day the asteroid will make its closest approach to Earth at 3:28 p.m. PST.

The trajectory of asteroid 2005 YU55 is well understood. At the point of closest approach, it will be no closer than 201,700 miles (324,600 kilometers) or 0.85 the distance from the moon to Earth. The gravitational influence of the asteroid will have no detectable effect on anything here on Earth, including our planet's tides or tectonic plates. Although 2005 YU55 is in an orbit that regularly brings it to the vicinity of Earth (and Venus and Mars), the 2011 encounter with Earth is the closest this space rock has come for at least the last 200 years.

During tracking, scientists will use the Goldstone and Arecibo antennas to bounce radio waves off the space rock. Radar echoes returned from 2005 YU55 will be collected and analyzed. NASA scientists hope to obtain images of the asteroid from Goldstone as fine as about 7 feet (2 meters) per pixel. This should reveal a wealth of detail about the asteroid's surface features, shape, dimensions and other physical properties (see "Radar Love" - http://www.jpl.nasa.gov/news/news.cfm?release=2006-00a ).

Arecibo radar observations of asteroid 2005 YU55 made in 2010 show it to be approximately spherical in shape. It is slowly spinning, with a rotation period of about 18 hours. The asteroid's surface is darker than charcoal at optical wavelengths. Amateur astronomers who want to get a glimpse at YU55 will need a telescope with an aperture of 6 inches (15 centimeters) or larger.

The last time a space rock as big came as close to Earth was in 1976, although astronomers did not know about the flyby at the time. The next known approach of an asteroid this large will be in 2028.
NASA detects, tracks and characterizes asteroids and comets passing close to Earth using both ground- and space-based telescopes. The Near-Earth Object Observations Program, commonly called "Spaceguard," discovers these objects, characterizes a subset of them, and plots their orbits to determine if any could be potentially hazardous to our planet.

NASA's Jet Propulsion Laboratory manages the Near-Earth Object Program Office for NASA's Science Mission Directorate in Washington. JPL is a division of the California Institute of Technology in Pasadena.

More information about asteroids and near-Earth objects is at: http://www.jpl.nasa.gov/asteroidwatch .

More information about asteroid radar research is at: http://echo.jpl.nasa.gov/ .

More information about the Deep Space Network is at:

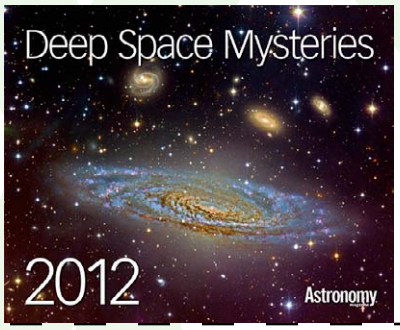
http://deepspace.jpl.nasa.gov/dsn

## Astronomy 2012 Calendar Order

Its time again to think about calendars for 2012. Cost to club members is $7.00 per calendar which is a nice discount off the retail price of $12.95. Payment will be due at December meeting.

Please email us at info@fmastronomy.com with the number of calendars you'd like to order this year. You can also contact Shawn by phone at (701) 200-1121.

Please place your order by Monday, November 28.

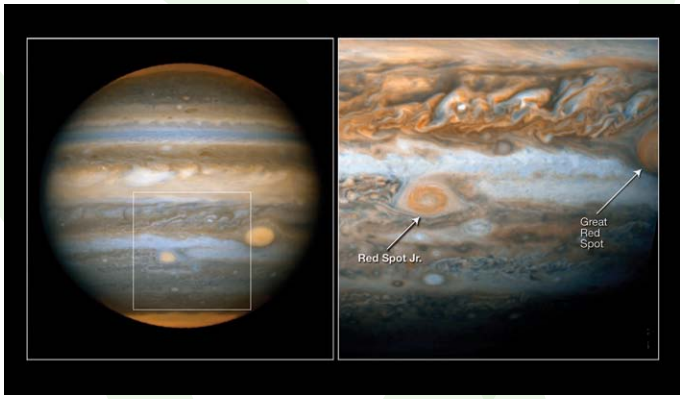



## SpacePlace Starry Notes

### Jupiter's "Red Spot Jr." lithograph

In 2006, Jupiter's Great Red Spot got a little brother, a red storm system officially called Oval BA. The red color may be due to deeper material dredged up by the storms and exposed to ultraviolet light, but the exact chemical process is still unknown.

National Aeronautics and Space Administration




Jupiter's "Red Spot Jr."